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ABSTRACT

This document presents the results of a survey concerning the percentage of mathematics, science, and social studies teachers who assign writing to their students and the percentage of textbooks in these three content areas which include writing assignments. Some of the findings were that mathematics and science teachers favor reporting over exposition whereas social studies teachers tend to favor equally exposition and reporting; and a greater proportion of surveyed science textbooks (45%) assigned writing than did either mathematics (5%) or social studies (19%). It is argued that the emerging role of the English teacher is that of writing consultant, one who helps teachers in other content fields assign, teach, and evaluate writing. (TS)

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Textbook Writing Assignments in Three Content Areas*

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Today most secondary school teachers realize that reading instruction doesn't stop at the primary grades, that, in fact, every teacher should be perceived as a teacher of reading--a content specialist. Could not the same case be made for writing? If content area teachers are the most appropriate ones to teach students to read texts, would they not also be the most appropriate ones to teach the content area writing that they or their textbooks assign?

Background to the Problem

A recent survey (Dorlan, 1974) indicated that many content area teachers do, in fact, assign writing. Table 1 indicates the percentage of surveyed mathematics, science, and social studies teachers assigning writing by type.

As Table 1 suggests, mathematics and science teachers favor reporting over exposition; whereas social studies teachers tend to favor equally exposition and reporting.

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Table 1. Percentage of content area teachers assigning writing by type. Based on 1974 survey.

Content Area	Writing Type			
	Reporting	Expo-sition	Narra-tion	Argu-ment
Mathematics	.45	.36	.18	.00
Science	.86	.36	.43	.14
Social Studies	.82	.88	.41	.53

In effect, if one were to rank order by preference, the four types of writing assigned by content area teacher, the results would look like this:

Table 2: Rank order preference of writing types by content area teachers based on 1974 survey.

Content Area	Writing Type			
	Reporting	Expo-sition	Narra-tion	Argu-ment
Mathematics	1	2	3	4
Science	1	3	2	4
Social Studies	2	1	4	3

The Problem

Although the small number of teachers surveyed would preclude making sweeping generalizations, differences by content area as to the role of writing in the classroom suggest areas for further study. For instance, many English teachers have been approached by social studies teachers to launch cooperative efforts in term paper assignments. What science teachers have not at one time condemned the inarticulateness of student reports? Even an occasional mathematics teacher expresses the need for clear writing. Since teachers in content areas rely on textbooks, one might want to determine if the composition needs of the content area teachers are reflected in the textbooks. That is, do textbooks in mathematics, science and social studies assign writing and if so, what type and how much?

Procedures and Results

To follow up the 1974 survey, one would need to examine textbooks popularly used in the three content areas. UCR has two curriculum centers containing recent textbooks, but only those for junior high level. Investigators reviewed 267 textbooks and listed each writing assignment. The review suggested that junior high school textbooks in mathematics, science, and social studies textbooks assign some writing. Table 3 indicates the percentages of surveyed textbooks that include writing assignments.

Table 3

Percentage of Content Area Textbooks

Assigning Writing

Content Area	Books Reviewed	Books Assigning Writing	%
Mathematics	195	9	.05
Science	29	13	.45
Social Studies	43	8	.19
Σ	267	30	.11

In effect, a greater proportion of surveyed science textbooks (45%) assigned writing than did either mathematics (5%) or social studies (19%) textbooks.

After locating those textbooks that assigned writing, investigators compiled lists of these assignments and classified them according to four broad types:

1. Reporting: an assignment where a student is directed to compile information with a minimum of critical or original thinking.

Mathematics

Report on the abacus and other ancient computing devices.

Science

Report on the lives of Pierre and Marie Curie.

Social Studies

Write a report on the history of international conflicts between Tsarist Russia and China.

2. Exposition: an assignment where a student is asked to explain an idea, conduct a critical investigation, synthesize points of view, or bring a fresh point of view to a problem.

Science

Explain the meaning of interaction. How has interaction broadened your knowledge of the Milky Way?

Social Studies

Compare and contrast the personality, appearance, and social manners of James and Dolly Madison.

3. Narration: an assignment where a student is asked to tell a story--anecdote, tall tale, legend, myth, short short story, drama, narrative poetry, vignette.

Science

Write a story of an imaginary trip to a planet you have studied.

Social Studies

Write a short skit about one controversy in the Constitutional Convention.

4. Argumentation: an assignment where a student attacks or defends an idea or belief.

Social Studies

Write a report either recommending or not recommending that more land be made available for transportation.

One problem in using this classification system--or any system--is its arbitrary nature. For example, difficulties arose in discriminating between exposition and argumentation, and between argumentation and narration. Specifically, an argument could be the exposition of a particular point of view; likewise, point of view narration could loosely be termed an argument.

Table 4 presents the number of writing assignments, by content area, by writing type.

Table 4

Number of Writing Assignments, by Content Area by Type

Content Area	Statistic	Writing Type				
		Reporting	Exposition	Narration	Argument	Σ
Mathematics	N books surveyed	9	9	9	9	9
	N assignments	58	0	0	0	58
	$\bar{X}$ assignments/book	6.4	0	0	0	6.4
	% assignments	1.00	.00	.00	.00	1.00
Science	N books surveyed	13	13	13	13	13
	N assignments	143	9	4	0	156
	$\bar{X}$ assignments/book	11	.7	.3	0	12
	% assignments	.91	.06	.03	.00	1.00
Social Studies	N books surveyed	8	8	8	8	8
	N assignments	170	178	25	12	385
	$\bar{X}$ assignments/book	21.3	22.3	3.1	1.5	48.1
	% assignments	.44	.46	.06	.03	.99

Table 4 presents interesting contrasts among the three content areas:

1. Mathematics texts assigned reporting exclusively; whereas science and social studies texts assigned additional writing types.
2. Only social studies texts assigned argumentation.
3. In all three content areas, reporting and exposition were assigned far more frequently than narration and argumentation, but social studies texts assigned much more exposition than either mathematics texts or science texts.
4. Book for book, social studies texts have more writing assignments than either mathematics or science.

After compiling the data from the textbooks, investigators rank ordered writing type preference by content area text and compared it informally with the rank order preference by content area teacher. Table 5 presents that data.

Table 5. Rank order preference of writing type by content area textbooks as compared to content area teachers surveyed in 1974.

Content Area		Writing Type			
		Report	Exposition	Narration	Argument
Mathematics	Text	1	-	-	-
	Teacher	1	2	3	4
Science	Text	1	2	3	4
	Teacher	1	3	2	4
Social Studies	Text	2	1	3	4
	Teacher	2	1	4	3

Table 5 suggests some generalizations about content area writing:

1. Mathematics writing focuses almost exclusively on reporting.
2. Whereas reporting is the most popular mode in science, exposition and narration are also assigned.
3. Social studies writing tends slightly more toward exposition than reporting, but narration and argument are also assigned.

Implications of This Study

Deficiency in student writing is every teacher's problem, not merely the English teacher's. An analysis of writing assignments made by teachers and textbooks in other content areas can reveal skills and modes of organization peculiar to that content area. It would seem that an emerging role of the English teacher is that of writing consultant, one who helps teachers in other content fields assign, teach, and

evaluate writing. To do this, she must have a "feel" for the writing modes both inherent in the field and in the particular assignment. The mathematics teacher assigning an extra credit report on the life of Isaac Newton wants some assurance that the student has done some outside reading but hasn't plagiarized, and might want to know how to teach paraphrasing. The science teacher assigning a science-fiction narrative might want to establish guidelines for narration. Social studies teachers assigning research projects might want to teach students to synthesize a variety of points of view. In all three cases, the English teacher could provide valuable service.

For content area teachers to perceive that teaching writing is their responsibility will take time. Only recently has reading in the content areas penetrated school philosophy. Perhaps writing will be next.

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